Complete Summary

GUIDELINE TITLE

Practice parameter: diagnostic assessment of the child with cerebral palsy: report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society.

BIBLIOGRAPHIC SOURCE(S)

Ashwal S, Russman BS, Blasco PA, Miller G, Sandler A, Shevell M, Stevenson R. Practice parameter: diagnostic assessment of the child with cerebral palsy: report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. Neurology 2004 Mar 23;62(6):851-63. [77 references] PubMed

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Cerebral palsy (CP)

GUIDELINE CATEGORY

Diagnosis
Evaluation
Screening

CLINICAL SPECIALTY

Neurology
Pediatrics

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To review data regarding the value and role of diagnostic tests used to evaluate children diagnosed with cerebral palsy (CP)
- To review evidence regarding the prevalence of associated problems such as epilepsy, mental retardation, speech and language disorders, and ophthalmologic and hearing impairments, and the need for their systematic evaluation

TARGET POPULATION

Children suspected of having cerebral palsy (CP)

INTERVENTIONS AND PRACTICES CONSIDERED

1. Neuroimaging including magnetic resonance imaging (MRI) and computed tomography (CT)
2. Metabolic and genetic testing
3. Coagulation studies
4. Evaluations for associated conditions including electroencephalography (EEG) for epilepsy and screening for mental retardation, ophthalmologic and hearing impairments, and speech and language disorders

MAJOR OUTCOMES CONSIDERED

Predictive value of diagnostic tests

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Literature searches were conducted with the assistance of the University of Minnesota Biomedical Information Services for relevant articles published from 1980 to March 2002. Medline, CINAHL, and Healthstar databases were searched for relevant articles published from 1966 to 2002, in the English language, using the following key words: cerebral palsy (CP), magnetic resonance imaging, MRI, computed axial tomography, CT scan, single photon emission tomography, SPECT, metabolic disease, thrombophilia, brain stem evoked potentials, sensory evoked potentials, visual evoked potentials, electroencephalography (EEG), seizures, epilepsy, vision loss, hearing loss, developmental delay, and speech and language delay.

Articles were excluded if the tests were ordered for reasons other than to establish the etiology. Only studies that contained more than 20 patients were included; smaller case series were excluded. The ages of infants and children included in these studies were similar to the ages of children typically seen for diagnostic evaluation so it was believed that the evidence-based recommendations included in this parameter were appropriate. It was also believed that as CP is usually due to a static process, it was unlikely for neuroimaging studies to change over time so that data from studies done in older children with CP were valid regarding etiologic yield.

NUMBER OF SOURCE DOCUMENTS

Approximately 350 titles and abstracts were reviewed for content regarding the establishment of the etiology of cerebral palsy (CP)

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Classification Scheme for Determining the Yield of Established Diagnostic and Screening Tests

Class I: A statistical, population-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. All patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients´ clinical presentations.

Class II: A statistical, non-referral-clinic-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. Most (>80%) patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients' clinical presentations.

Class III: A selected, referral-clinic-based sample of patients studied during the course of the condition. Some patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation by someone other than the treating physician.

Class IV: Expert opinion, case reports, or any study not meeting criteria for class I to III.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Each article was reviewed, abstracted, and classified by a committee member. Data extracted include first author, year, study population, study design, number of patients, types of cerebral palsy (CP), results of testing, and outcomes measured. A new four-tiered classification scheme for determining the yield of established diagnostic and screening tests developed by the Quality Standards Subcommittee was utilized as part of this assessment (see "Rating Scheme for the Strength of the Evidence" above). This classification scheme is different from the one currently used in recently published practice parameters that evaluate diagnostic, prognostic, or therapeutic articles. Depending on the strength of this evidence, it was decided whether specific recommendations could be made, and if so, the level of strength of these recommendations (see "Rating Scheme for the Strength of the Recommendations" below).

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Other

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

When formulating the recommendations the guideline developers considered the magnitude of the effect (benefit or harm of therapy, accuracy of tests, yield of studies) and the relative value of various outcomes. Under most circumstances, there is a direct link between the level of evidence used to formulate conclusions and the strength of the recommendation. This linkage is illustrated in Appendix 9 of the 2004 AAN Guideline Process Manual (see Companion Documents field). Thus, an "established as" (two class I) conclusion supports a "should be done" (level A) recommendation; a "probably effective" (two class II) conclusion supports a "should be considered" (level B) recommendation; a "possibly effective" (two class III) conclusion supports a "may be considered" recommendation. In those circumstances where the evidence indicates that the intervention is not effective or useful, wording was modified. For example, if multiple adequately powered class I studies demonstrated that an intervention is not effective, the recommendation read, "should not be done."

There are important exceptions to the rule of having a direct linkage between the level of evidence and the strength of recommendations. Some situations where it may be necessary to break this linkage are listed below:

- A statistically significant but marginally important benefit of the intervention is observed
- The intervention is exorbitantly costly
- Superior and established alternative interventions are available
- There are competing outcomes (both beneficial and harmful) that cannot be reconciled

Under such circumstances the guideline developers may have downgraded the level of the recommendation.

Edlund W, Gronseth G, So Y, Franklin G. Clinical practice guideline process manual. St. Paul (MN): American Academy of Neurology (AAN); 2004. 49 p.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Translation of Evidence to Recommendations

Level A rating requires at least one convincing class I study or at least two consistent, convincing class II studies.

Level B rating requires at least one convincing class II study or overwhelming class III evidence.

Level C rating requires at least two convincing class III studies.

Rating of Recommendations

A = Established as useful/predictive or not useful/predictive for the given condition in the specified population.

B = Probably useful/predictive or not useful/predictive for the given condition in the specified population.

C = Possibly useful/predictive or not useful/predictive for the given condition in the specified population.

U = Data inadequate or conflicting. Given current knowledge, test, predictor is unproven.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Guidelines were approved by the Quality Standards Subcommittee in March 2003, the American Academy of Neurology (AAN) Practice Committee on August 9, 2003, and the AAN Board of Directors on October 18, 2003.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions of the strength of the recommendations (A, B, C, U) and classification of the evidence (Class I through Class IV) are provided at the end of the "Major Recommendations" field.

Neuroimaging

1. Neuroimaging is recommended in the evaluation of a child with cerebral palsy (CP) if the etiology has not been established; for example, by perinatal imaging (Level A, class I and II evidence).
2. Magnetic resonance imaging (MRI), when available, is preferred to computed tomography (CT) scanning because of the higher yield of suggesting an etiology and timing of insult leading to CP (Level A, class I–III evidence).

Metabolic and Genetic Testing

1. Metabolic and genetic studies should not be routinely obtained in the evaluation of the child with CP (Level B, class II and III evidence).
2. If the clinical history or findings on neuroimaging do not determine a specific structural abnormality or if there are additional and atypical features in the history or clinical examination, metabolic and genetic testing should be considered (Level C, class III and IV).
3. Detection of a brain malformation in a child with CP warrants consideration of an underlying genetic or metabolic etiology (Level C, class III and IV evidence).

Coagulopathies

1. Because the incidence of unexplained cerebral infarction seen with neuroimaging is high in children with hemiplegic CP, diagnostic testing for a coagulation disorder should be considered (Level B, class II–III evidence). There is insufficient evidence to be precise as to what studies should be ordered.

Associated Conditions

Epilepsy

1. An electroencephalogram (EEG) should not be obtained for the purpose of determining the etiology of CP (Level A; class I and II evidence).
2. An EEG should be obtained when a child with CP has a history or examination features suggesting the presence of epilepsy or an epileptic syndrome (Level A; class I and II evidence).

Mental Retardation, Ophthalmologic Impairments, Speech and Language Disorders, Hearing Impairments

1. Because of the high incidence of associated conditions, children with CP should be screened for mental retardation, ophthalmologic and hearing impairments, and speech and language disorders (Level A, class I and II evidence). Nutrition, growth, and other aspects of swallowing dysfunction should be monitored. Further specific evaluations are warranted if screening suggests areas of impairment.

Definitions:

Rating of Recommendation

A = Established as useful/predictive or not useful/predictive for the given condition in the specified population.

B = Probably useful/predictive or not useful/predictive for the given condition in the specified population.

C = Possibly useful/predictive or not useful/predictive for the given condition in the specified population.

U = Data inadequate or conflicting. Given current knowledge, test, predictor is unproven.

Translation of Evidence to Recommendations

Level A rating requires at least one convincing class I study or at least two consistent, convincing class II studies.

Level B rating requires at least one convincing class II study or overwhelming class III evidence.

Level C rating requires at least two convincing class III studies.

Classification Scheme for Determining the Yield of Established Diagnostic and Screening Tests

Class I: A statistical, population-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. All patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients´ clinical presentations.

Class II: A statistical, non-referral-clinic-based sample of patients studied at a uniform point in time (usually early) during the course of the condition. Most (>80%) patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation that is masked to the patients' clinical presentations.

Class III: A selected, referral-clinic-based sample of patients studied during the course of the condition. Some patients undergo the intervention of interest. The outcome, if not objective, is determined in an evaluation by someone other than the treating physician.

Class IV: Expert opinion, case reports, or any study not meeting criteria for class I to III.

CLINICAL ALGORITHM(S)

A clinical algorithm was provided for the evaluation of the child with cerebral palsy (CP).

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Accurate determination of the etiology of cerebral palsy (CP) has specific implications regarding treatment, prognosis, and ongoing medical management of associated conditions.
- The importance of determining whether there is a malformation, genetic etiology, or injury and whether the injury is due to an acquired pre-, peri-, or postnatal process has obvious significance from the point of view of assessment of recurrence risk, counseling of families, and implementation of prevention programs, and when medicolegal issues arise.
- Determining causality also helps limit further unnecessary testing.
- Finally, understanding the etiology of CP has implications for prevention and intervention strategies.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This statement is provided as an educational service of the American Academy of Neurology (AAN) and the Child Neurology Society (CNS). It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The AAN and the CNS recognize that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Ashwal S, Russman BS, Blasco PA, Miller G, Sandler A, Shevell M, Stevenson R. Practice parameter: diagnostic assessment of the child with cerebral palsy: report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. Neurology 2004 Mar 23;62(6):851-63. [77 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2004 Mar 23

GUIDELINE DEVELOPER(S)

American Academy of Neurology - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Neurology (AAN)

GUIDELINE COMMITTEE

Quality Standards Subcommittee of the American Academy of Neurology

Practice Committee of the Child Neurology Society

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

AAN Quality Standards Subcommittee Members: Gary Franklin, MD, MPH (Co-Chair); Gary Gronseth, MD (Co-Chair); Charles E. Argoff, MD; Stephen Ashwal, MD (ex-officio); Christopher Bever, Jr., MD; Jody Corey-Bloom, MD, PhD; John D.

England, MD; Jacqueline French, MD (ex-officio); Gary H. Friday, MD; Michael J. Glantz, MD; Deborah Hirtz, MD; Donald J. Iverson, MD; David J. Thurman, MD; Samuel Wiebe, MD; William J. Weiner, MD; Catherine Zahn, MD (ex-officio)

Practice Committee of the Child Neurology Society Members: Carmela Tardo, MD (Chair); Bruce Cohen, MD (Vice-Chair); Elias Chalhub, MD; Roy Elterman, MD; Murray Engel, MD; Bhuwan P. Garg, MD; Brian Grabert, MD; Annette Grefe, MD; Michael Goldstein, MD; David Griesemer, MD; Betty Koo, MD; Edward Kovnar, MD; Leslie Anne Morrison, MD; Colette Parker, MD; Ben Renfroe, MD; Anthony Riela, MD; Michael Shevell, MD; Shlomo Shinnar, MD; Herald Silverboard, MD; Russell Snyder, MD; Dean Timmons, MD; Greg Yim, MD; Mary Anne Whelan, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: A list of American Academy of Neurology (AAN) guidelines, along with a link to a Portable Document Format (PDF) file for this guideline, is available at the AAN Web site.

Print copies: Available from the AAN Member Services Center, (800) 879-1960, or from AAN, 1080 Montreal Avenue, St. Paul, MN 55116.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- AAN guideline development process [online]. St. Paul (MN): American Academy of Neurology (AAN). Available from the AAN Web site.
- Practice parameter: diagnostic assessment of the child with cerebral palsy. AAN guideline summary for clinicians. St. Paul (MN): American Academy of Neurology. 2. p. Electronic copies available in Portable Document Format (PDF) from the AAN Web site.
- Edlund W, Gronseth G, So Y, Franklin G. Clinical practice guideline process manual. St. Paul (MN): American Academy of Neurology (AAN); 2004. 49 p. Electronic copies available in Portable Document Format (PDF) from the AAN Web site.

PATIENT RESOURCES

The following is available:

Evaluating and diagnosing the child with cerebral palsy. AAN guideline summary for parents and caregivers. St. Paul (MN): American Academy of Neurology (AAN). 2 p.

Electronic copies: Available in Portable Document Format (PDF) from the AAN Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This NGC summary was completed by ECRI on August 17, 2004. The information was verified by the guideline developer on September 9, 2004.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is copyrighted by the American Academy of Neurology.

© 1998-2004 National Guideline Clearinghouse

Date Modified: 11/8/2004